/631

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

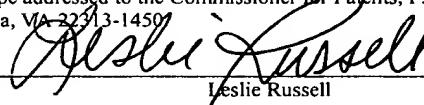|	
In re application of: Selifonov, et al	Attorney Docket No.: MXGNP001X1/124.410
Application No.: 09/494,282	Examiner: Zhou, Shubo
Filed: January 18, 2000	Group: 1631
Title: METHODS FOR MAKING CHARACTER STRINGS, POLYNUCLEOTIDES AND POLYPEPTIDES HAVING DESIRED CHARACTERISTICS	

INFORMATION DISCLOSURE STATEMENT
BEFORE FINAL ACTION OR NOTICE OF ALLOWANCE
(37 CFR §§ 1.56 AND 1.97(c))

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The references listed in the attached PTO Form 1449, a copy of which is attached, may be material to examination of the above-identified patent application. Applicants submit this reference in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make this citation of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that this reference indeed constitutes prior art.

This Information Disclosure Statement is being filed after the mailing date of the first Office Action on the merits, or after three months of the filing date of this application, whichever event occurred last, but it is believed before the mailing date of either: (i) a final action under §1.113 or (ii) a notice of allowance under §1.311, whichever occurs first.

Accompanying this Information Disclosure Statement is

☐ a statement as specified in 37 CFR 1.97(e); or

☒ the fee set forth in 37 CFR 1.17(p).

Enclosed is our Check No. 8773 for $180.00 in payment of the Information Disclosure Statement Fee. If it is determined that any additional fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 500388 (Order No. MXGNP001X1).

Respectfully submitted,

BEYER WEAVER & THOMAS, LLP

Jeffrey K. Weaver
Registration No. 31,314

P.O. Box 778
Berkeley, CA 94704-0778
(510) 843-6200

Form 1449 (Modified)	Atty Docket No. MXGNP001X1/0124.410	Application No.: 09/494,282
Information Disclosure Statement By Applicant	Applicant: Selifonov et al.	
(Use Several Sheets if Necessary)	Filing Date January 18, 2000	Group 1631

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	C1	Hellberg et al., "The Prediction of Bradykinin Potentiating Potency of Pentapeptides. An Example of a Peptide Quantitative Structure-Activity Relationship," Acia Chemica Scandinaviea B 40, pp. 135-140, 1988
	C2	Bucht et al., "Optimising the Signal Peptide for Glycosyl Phosphatidylinositol Modification of Human Acetylcholinesterase Using Mutational Analysis and Peptide-Quantitative Structure-Activity Relationships," Biochimica et Biophysica Acta 1431, pp. 471-482, 1999
	C3	Sandberg et al., "Engineering Multiple Properties of a Protein by Combinatorial Mutagenesis," Proc. Natl. Acad. Sci. USA, Vol. 90, pp. 8367-8371, September 1993
	C4	Wrede et al., "Peptide Design Aided by Neural Networks: Biological Activity of Artificial Signal Peptidase I Cleavage Sites," Biochemistry, 37, pp. 3588-3593, 1998
	C5	Jill Damborsky, "Quantitative Structure-Function and Structure-Stability Relationships of Purposely Modified Proteins," Protein Engineering, Vol. 11, no. 1, pp. 21-30, 1998
	C6	Hellberg, et al., "Peptide Quantitative Structure–Activity Relationships, a Multivariate Approach," J. Med Chem, 30: pp 1126-1195, 1987
	C7	Sandberg et al., "New Chemical Descriptors Relevant for the Design of Biologically Active Peptides. A Multivariate Characterization of 87 Amino Acids," J. Med Chem., 41, pp. 2481-2491, 1998
	C8	Casari et al., "A Method to Predict Functional Residues in Proteins," Nat. Struct Biol., 2, pp. 171-178, 1995
	C9	Suzuki et al., "A Method for Detecting Positive Selection at Single Amino Acid Sites," Mol. Biol. Evol. 16 (10): pp. 1315-1328, 1999
	C10	Benner et al., "Amino Acid Substitution During Functionally Constrained Divergent Evolution of Protein Sequences," Protein Engineering, Vol. 7, No. 11, pp. 1323-1332, 1994

		Form 1449 (Modified)	Atty Docket No. MXGNP001X1/0124.410	Application No.: 09/494,282
		Information Disclosure Statement By Applicant	Applicant: Selifonov et al.	
			Filing Date	Group
		(Use Several Sheets if Necessary)	January 18, 2000	1631

	C11	Wu et al., "Discovering Empirically Conserved Amino Acid Substitution Groups in Databases of Protein Families," Proc. Int. Conf. Intell. Syst. Mol. Biol., 4, pp. 230-240, 1996	
	C12	Adenot et al., "Peptides Quantitative Structure-Function Relationships: An Automated Mutation Strategy to Design Peptides and Pseudopeptides from Substitution Matrices," Journal of Molecular Graphics and Modelling, 17, pp. 292-309, 1999	
	C13	Norinder et al., "A Quantitative Structure-Activity Relationship Study of Some Substance P-Related Peptides," J. Peptide Res., 49, pp. 155-162, 1997	
	C14	Sandberg, "Deciphering Sequence Data a Multivariate Approach," Ph.D Thesis, Umea: Umea University, 78 pages, 1997	
	C15	Eriksson et al., "Peptide QSAR on Substance P Analogues, Enkephalins and Bradykinins Containing L-and D-Amino Acids," Acta Chemica Scandinavica, 44, pp. 50-56, 1990	
	C16	Ufkes eta l., "Further Studies on the Structure-Activity Relationships of Bradykinin-Potentiating Peptides," European Journal of Pharmacology, 79, pp. 155-158, 1982	
	C17	Dobrynin et al., "Synthesis of Model Promoter for Gene Expression in Escherichia Coli," Symposium Series No. 7, pp. 365-376, 1980	
	C18	Skinner et al., "Potential Use of Additivity of Mutational Effects in Simplifying Protein Engineering," Proc. Natl. Acad. Sci., Vol. 93, pp. 10753-10757, 1996	
	C19	Lathrop et al., "Global Optimum Protein Threading with Gapped Alignment and Empirical Pair Score Functions," J. Mol. Biol., 255, pp. 641-665, 1996	
	C20	Hellberg et al., "A Multivariate Approach to QSAR," Ph.D. Thesis, Umea, Sweden: University of Umea: 1986	
	C21	Nambier et al., "Total Synthesis and Cloning of a Gene Coding for the Ribonuclease S Protein," Science, 223: 1299-1301, 1984	
	C22	Lin et al., "Functional Expression of Horseradish Peroxidase in E. Coli by Directed Evolution," Biotechnol. Prog, 15: 467-471, 1999	
	C23	Lathrop R.H., "The Protein Threading Problems with Sequence Amino Acids Interaction Preference is NP-Complete," Protein Eng., 7:1059-1068, 1994	
	C24	Hanes et al., "In Vitro Selection and Evolution of Functional Proteins by Using Ribosomes Display," Proc. Natl. Acad. Sci. USA, 94: 4937-4942, 1997	
	C25	Wells et al., "Rapid Evolution of Peptide and Protein Binding Properties *in vitro*," Curr Opin Biotechnol, 3:355-362, 1992	

	Form 1449 (Modified) **Information Disclosure Statement By Applicant** (Use Several Sheets if Necessary)	Atty Docket No. MXGNP001X1/0124.410 Applicant: Selifonov et al. Filing Date January 18, 2000	Application No.: 09/494,282 Group 1631

	C26	Johnson et al., "The Traveling Salesman Problem: A Case Study in Local Optimization," In Local Search in Combinatorial Optimization, Edited by Aarts et al., John Wiley & Sons Ltd., 21-310, 1997
	C28	Jonsson et al., "Quantitative Sequence-Activity Models (QSAM) – Tools for Sequence Design," Nucleic Acids Res., 21:733-739, 1993
	C29	Geladi et al., "Partial Least Squares Regression: A Tutorial," Anal Chim Acta, 168: 1-17, 1986
	C30	Holowachuk et al., "Efficient Gene Synthesis by Klenow Assembly/Extension-Pfu Polymerase Amplification (KAPPA) of Overlapping Olingonucleotides," PCR Methods Appl, 4:299-302, 1995
	C31	Hellberg et al., "Minimum Analogue Peptide Sets (MAPS) for Quantitative Structure-Activity Relationships," Int J Pept Protein Res, 37:414-424, 1991
	C32	Mee et al., "Design of Active Analogues of a 15-Residue Peptide Using D-Optimal Design, QSAR and a Combinatorial Search Algorithm," J Pept Res, 49:89-102, 1997
	C33	Schneider et al., "Peptide Design by Artificial Neural Networks and Compouter-Based Evolutionary Search," Proc Natl Acad Sci USA, 95:12179-12184, 1998
	C34	Sjostrom et al.," Signal Peptide Amino Acid Sequences in Escharichla Coli Contain Information Related to Final Protein Localization, A Multivariate Data Analysis," EMBO, 6:823-891, 1987
	C35	Patel et al., "Patenting Computer-Designed Peptides," Journal of Computer-Aided Molecular Design, 12:543-556, 1998
	C36	Aita et al., "Theory of Evolutionary Molecular Engineering Through Simultaneous Accumulation of Advantageous Mutations," J. Theor. Biol., 207:543-556, 2000
	C37	Darius et al., "Simulated Molecular Evolution of Computer Generated Artifacts?," Biophysical Journal, 67:2120-2122, 1994
	C38	Singh et al., "Application of Genetic Algorithms to Combinatorial Synthesis: A Computational Approach to Lead Identification and Lead Optimization," J.Am. Chem. Soc., 118:1669-1676, 1996
		Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.